

referred by systematists to the *Viverridæ*, but Sir William Flower's account of its anatomy, published in 1869 (*P.Z.S.* 1869, p. 31), has placed its correct systematic position among the *Procyonidæ* beyond question.

(3) The Grey Coly-strike (*Hypocolius ampelinus*).—For their living specimens of this rare and beautiful passerine bird, which will be found lodged in one of the large cages in the parrot-house, the Society are indebted to their excellent correspondent Mr. W. D. Cumming, of Fao, on the Persian Gulf. The coly-strike has obtained its name, together with its scientific appellation *Hypocolius*, from some fancied resemblance to the African colies (*Colius*), with which, however, it has really nothing to do, though the tints of its plumage exhibit some slight similarity to the above-mentioned form. But *Hypocolius* is a true passerine bird; probably belonging to the caterpillar-hunters (*Campophagidæ*), though this is by no means certain. It was first discovered by the French collector Botta, on the coast of Abyssinia, and described from his specimens by Bonaparte. The German naturalist Heuglin obtained examples of it in 1850 from Massowah,

It is a member of the Agamoid genus *Physignathus*, of which seven species are recognised by Mr. Boulenger in his "Catalogue of Lizards." Of these four are inhabitants of Australia, whilst one comes from Timor Lant, and the remaining two are found in Cochin China and Siam. The name is taken from the bladder-like expansion of the lower angle of the jaw, which is very striking in these lizards.

In habits the *Physignathi* are said to be aquatic, inhabiting the trees on the margins of rivers, and swimming well with the aid furnished by the wide expansion of the horizontal fringes of scales on the sides of their long stout toes.

The Zoological Society's specimen of this lizard—so far as is known the first that has reached Europe alive—was received, along with other Australian reptiles, in exchange from the Australian Museum, Sydney.

NOTES.

PROF. ROBERTS-AUSTEN has been awarded, by the Société d'encouragement pour l'industrie Nationale of Paris, a prize of 2000 frs. for his recent researches on alloys, and more particularly for those which relate to the behaviour of metals and alloys at high temperatures and to their mechanical properties as influenced by small quantities of added elements.

AT the last general meeting of the Zoological Society, it was announced by the Council that they had resolved to bestow the silver medal of the Society on Mr. Henry Hamilton Johnson, C.B., H.B.M. Commissioner and Consul-General for British Central Africa, in acknowledgment of the efforts he had made to increase our knowledge of the zoology of British Central Africa.

WE regret to learn that the American journal *Science* has been discontinued owing to insufficiency of support. The first number appeared on February 9, 1883, and though the circulation, after fluctuating, has steadily increased during the last two years, the paper has never paid expenses.

THE Salters' Company have recently established in connection with the medical school of St. Thomas's Hospital a Research Fellowship in Experimental Pharmacology of the annual value of £100. The Fellow elected, who may hold the office for three years, will be required to devote himself to the study of the physiological action of drugs. The Salters' Company have also endowed a similar Research Fellowship in Chemistry in connection with the research laboratory of the Pharmaceutical Society, in order to provide for investigations on the chemical side of pharmacology.

THE Prince Jablonowski Society of Leipzig has just issued the subject for the mathematical competition of 1897. It is well known that the methods of integrating partial differential equations of the second and higher orders, due to Monge, Ampère, and Darboux, can only be applied to equations which have solutions in common with other equations, which solutions are not entirely dependent upon arbitrary constants. On the other hand, it follows from Lie's investigations of infinite groups that equations admitting of an infinite group of contact transformations have in general this relation of involution to other equations. The problem proposed by the Society is that of developing the methods of integration indicated, and to illustrate them by the most instructive and completely worked-out examples. The prize offered consists of 1000 marks (about £50). Full particulars are given in the annual report of the Society, 1894.



FIG. 4.—Lesueur's Water-lizard.

in the same district. It was rather a surprise to naturalists when the bird was found to extend far into Central Asia. In March 1875, Mr. Blanford obtained specimens of *Hypocolius* in Upper Sind which were ascertained not to differ from African examples, and since then Mr. Cumming has, as already mentioned, found it not uncommon in the vicinity of Fao, on the Persian Gulf. Our figure, which has been kindly lent to us by the authorities of the Zoological Society of London, represents both sexes of this bird during their attempts at nest-making in the Zoological Society's aviary.

(4) Lesueur's Water-lizard (*Physignathus lesueurii*).—Some very strange forms of Agamoid lizards are found in Australia, such as *Chlamydosaurus kingi* with its conspicuous frill, and *Moloch horridus* with its coat of spikes, pronounced by an American writer to be "one of the most repulsive creatures in nature"! The lizard which we now figure, though belonging to the same family, is, however, rather elegant in shape, and bright in colour.

A LARGE number of pupils, friends, and colleagues of Prof. Bertrand, the Permanent Secretary of the Paris Academy of Sciences, met at the École Polytechnique on May 27, and presented him with a medal struck in commemoration of the jubilee of his service on the staff of the school. M. Maurice Lœwy, the President of the Academy of Sciences, presided over the meeting, and among those who assembled to do honour to Prof. Bertrand were General André, MM. Faye, Darboux, and Cornu, M. Gaston Boissier (the Administrator of the Collège de France), G. Perrot (the Director of the École Normale), M. Poincaré, and M. Mercadier (the Director of Studies at the École Polytechnique). "Un pays s'honore en honorant ses grands citoyens," says the *Revue Scientifique* in its report of the ceremony. This aphorism is borne in mind in France more than anywhere else. Bertrand has now been honoured by receiving the homage of his admirers and pupils, like Pasteur and Hermite before him. It is right that this regard should be expressed in the manner it has, for the mathematical sciences do not appeal to the generality; and the only recompense a student of them can hope for is a recognition of the scientific importance of his labours by fellow-workers. The meeting at the Polytechnic School, and the speeches that were made at it, must have made Prof. Bertrand feel that the consecration of his life to the search for truth has brought a reward worth working for.

THE death is announced of Geheimrath A. Kundt, Professor of Physics in Berlin University, and of Dr. K. W. Baur, Professor of Mathematics in the Stuttgart Technische Hochschule.

THE *British Medical Journal* states that Prof. Czerny has declined the offer of the Chair of Surgery in the University of Vienna, made to him by the Austrian Government. It is believed that the reason for his refusal to accept the succession of his old master, Billroth, is the inadequacy of the laboratory and teaching equipment in the Allgemeines Krankenhaus.

WE learn from *La Nature* that a company, formed some time ago for the purpose of constructing an electric railway on the Jungfrau, have asked permission to devote a sum of one hundred thousand francs to the erection of a geophysical observatory, and five thousand francs annually for its maintenance. The observatory would have an altitude of 4200 metres, and the projected line would put it into direct communication with the valley below.

ACCORDING to the *Zoologist* for June, a committee of English sportsmen and naturalists has been formed for the purpose of devising some scheme for the protection of South African mammals, chiefly giraffe, zebra, gland, gnu, koodoo, and other antelopes, several of which, owing to indiscriminate slaughter, are on the verge of extinction. To attain this desirable end it is proposed to enclose a suitable tract of country, of about one hundred thousand acres, with a wire fencing, strengthened by a strong live fence of thorn on the outside. It is hoped that the British South African Chartered Company may allow such an enclosure to be made in the district near Fort Salisbury, which has already been reserved for game by the Company. That such a scheme is feasible is shown by the success which has attended Mr. Austin Corbin's efforts to establish in New Hampshire, U.S.A., a similar game park to that suggested, covering an area of twenty-eight thousand acres. The description of the enclosing and stocking of this park, which follows the proposals of the new preservation society in the *Zoologist*, will do much to combat adverse criticism.

The aim of the National Home-Reading Union may be summed up in a short sentence—to render study attractive. A happy experience of four successive summers has proved to the council of the society that there is no other means by which

this can be accomplished so effectively as by taking the student to the locality which most abundantly illustrates his work. We all know that geology can only be learned in the field; and, in like manner, the beginnings of history acquire an objective reality as one stands within the circle at Stonehenge. Botany, also, is irresistibly interesting when the teacher accompanies his pupils through a wood or over a moor. The summer assemblies of the Union, which are open to all, whether members of the Union or not, will be held this year at Buxton, in Derbyshire, during the last week in June, and at Salisbury during the first week in July. The character of the scientific side of the meetings may be gathered from the following abridged list of lecturers and subjects. At Buxton the inaugural address will be given by the Ven. Archdeacon Farrar, and lectures will be delivered by the Rev. R. Harley, F.R.S., and others. The geological excursions will be conducted by Mr. J. C. Marr, F.R.S., who will lecture on "The Building of the Pennine Chain." Conferences upon various social and educational subjects have also been organised. The object of the meeting at Salisbury will be the study of the monuments with which the district abounds, illustrative of the archæology, art, and history of Early England—"from Stonehenge to Salisbury Cathedral." Among the lecturers are Professor Jebb, General Pitt Rivers, F.R.S., and Sir Robert Ball, F.R.S. Archæology and geology will be in the charge of Dr. Humphry Blackmore, Professor T. McKenny Hughes, F.R.S., and Baron Anatole von Hügel. Mr. A. C. Seward will lecture on Botany, and accompany the excursions as botanical guide. The Marquis of Bath will preside at the Salisbury assembly, and the Right Hon. W. Woodall, M.P., at the Buxton meeting. Full programmes can be obtained from the Secretary to the Union, Surrey House, Victoria Embankment, London, W.C.

THE current number of *Himmel und Erde* contains a valuable article by Dr. J. Hann, entitled "Ebb and Flow of the Earth's Atmosphere." The paper deals entirely with the diurnal and annual range of the barometer, and Dr. Hann's laborious investigations of these phenomena have frequently been referred to in our columns. It is more than 200 years ago since the regular variation of the barometer by day-time was first observed, and the first person who investigated the regular variation during the night-time, and fixed the morning minimum at about 3h. or 4h. a.m. was the celebrated botanist Cölestino Mutis, at Bogota, who commenced his observations in 1761. Blandford and F. Chambers first explained the characteristic difference between the daily range on the sea-coast and at inland stations, and showed the connection of this difference with land and sea breezes. Dr. Hann points out that while there is a large number of theories as to the cause of the double daily oscillation of the barometer, none of them satisfactorily explains the whole of the phenomena. With regard to the yearly range he shows that when the values for the northern and southern hemispheres are separately considered, it is found that the smallest quantities occur in both hemispheres in July, so that we obtain the important result that the values of the double daily oscillation depend more upon the position of the earth with respect to the sun than upon the seasons. He agrees with Lord Kelvin and others that the only means of eventually obtaining a satisfactory explanation of the subject will be by harmonic analysis, and by comparison of the variations at a large number of stations.

THE sixth annual report of the trustees of the Marine Biological Laboratory at Wood's Holl, Massachusetts, informs us that not only has the past season been very successful as far as the number of students and investigators and the quality of their work are concerned, but also that the condition of the finances is more satisfactory than at any time since the founda-

tion of the laboratory. The fact that eighteen different colleges and universities now contribute annually to the support of tables in the laboratory is very encouraging, as showing a wide-spread interest in the laboratory as the summer working-place of both instructors and students interested in biology. It is the aid thus obtained from colleges and universities which, for the first time since its establishment, has rendered the laboratory self-supporting during the past season. The number of students and investigators occupying work-tables last summer was one hundred and eleven, this being the extreme limit of accommodation. There is every reason to believe that the number of applicants for places during the coming summer will considerably exceed the present capacity of the laboratory, and, unless the present building is enlarged, it will be impossible to accommodate them. The trustees hope that provision will be made for the increasing number of students. Further, they have to consider the question of the extension of the field of usefulness by the introduction of departments of biology not yet represented, and the development of those recently introduced into the institution. Such an extension implies an increase of working room, as well as an increase in the laboratory equipment. For the first time, the laboratory numbered last summer among its workers investigators in comparative pathology, and it is thought that, in the near future, this branch of biology should be included among the lines of investigation to be carried on in the laboratory, as are zoology, botany, and physiology at the present time.

A RECENT number of *Science* contains a short article on the employment of disease-causing microbes for the destruction of field mice and similar vermin, in which attention is called to a paper on this subject recently presented to the French Academy by M. Jean Danysz. The microbe employed in producing artificially a destructive epidemic amongst these troublesome vermin, is stated by the author to be very similar to the bacillus of duck cholera, but is not identical, for it is not pathogenic either to these birds or other fowls. Both Löffler and Lasar have discovered similar microbial enemies to field mice which have been used with marked success for the suppression of plagues of these animals, but so far in the United States they have been content to use poisoned grain or carbon bisulphide for this purpose; but Mr. Gerald M'Carthy's interesting little article will no doubt attract attention to this more novel method of dealing with such vermin. Another article in this number is on the self-purification of rivers, a subject upon which so much difference of opinion exists, that it invariably affords ample material for discussion. The aëration of the water of rivers in falling over dams and natural obstructions, has been regarded by some as exerting an important influence in purification, but according to the experiment made by Prof. Leeds upon the water above and below Niagara Falls, where natural aëration is carried on to the utmost extent possible, no chemical purification is effected during the process. The bacterial aspect of the subject is also discussed, and the writer closes his article with the observation that "a river which receives sewage should be considered unfit to serve as a public water supply." Fortunately in this country we are alive to this objection, but many of the largest cities in America invariably use sewage polluted river-water unpurified, resulting in severe epidemics of typhoid fever.

A PORT BLAIR correspondent of the Allahabad *Pioneer* announces the discovery of the remains of an elephant on South Sentinel, an islet about twenty miles from any other land. The remains were buried about nine inches below the surface, and since the yearly deposit of soil on the island must be very small, it is supposed that they are of very considerable age. It is, moreover, interesting to learn that the volcano on Barren Island is apparently entering upon a period of renewed activity.

THE Washington letter in the last number of the *Bulletin* of the American Geographical Society announces that the recent study of the observations on mountain summits in the neighbourhood of Mount St. Elias, shows that Mount Logan is the loftiest peak in North America with a height of 19,500 feet, thus being 1200 feet higher than Orizaba, and 1500 feet higher than Mount St. Elias itself.

THE June number of the *Geographical Journal* completes the third volume of the new form of the monthly publication of the Royal Geographical Society. It contains an exceptional range of geographical news, including the text of Mr. Littledale's paper on his recent journey across Central Asia, with a series of original maps and illustrations. Mr. Dolby Tyler contributes an account of his journey up the river Napo, perhaps the least known of all the tributaries of the Amazon. There is an excellent account of the primitive "Indians" of the region. Mr. Ravenstein, in a lightly written article on recent African books, incidentally calls attention to the immense flood of literature on that continent now appearing, his list including twenty-one works, all published within the last few months. Mr. H. Yule Oldham has a most readable account of the Manchester ship-canal, showing its peculiar geographical importance, and Mr. A. Montefiore gives a note on the geography of Franz-Josef Land.

THE *Scottish Geographical Magazine* for June contains the first part of an extremely valuable paper by Prof. Otto Pettersson, of Stockholm, on Swedish hydrographical work on the Baltic and North Seas. He uses *hydrographical* not in the ordinary English sense of a mere survey by soundings, but with the wider meaning of a physical and chemical examination of the water. This first part, indeed, is mainly chemical, detailing the processes employed for analysing the dissolved gases and determining the salinity and density of sea-water. The author's opinion that the use of hydrometers in marine research is nearly past, and that only determinations of density by weighing with apparatus similar to Sprengel's pyknometer can be held as sufficiently accurate, is not corroborated by the experience of most British oceanographers in whose hands the *Challenger*-type hydrometer has given most excellent results. The Edinburgh magazine sustains by this article the high reputation it has long held as the first English authority on oceanography, and it is to be congratulated on securing the first publication in any language usually read by scientific men outside Scandinavia of so original and able a treatise.

THE current number of *Wiedemann's Annalen* contains a paper on the similarity between the after-glow of a Geissler tube and the first glow of solid bodies, by Carl Kirn. Herr H. F. Weber has shown that the first light which becomes visible when a solid body is heated, is not, as was supposed by Draper, dark red but grey, which shows itself spectroscopically as a band in the yellow-green. The researches of Stenger and Ebert on the limits of the visible light have shown that the phenomenon was caused by the different sensitiveness of the eye to the different colours, this sensitiveness being a maximum for that part of the spectrum where the band of grey light is first seen. The Geissler tube employed by the author exhibited, after an electric discharge had been passed through it, all the phenomena observed by Riess and Morren; the yellowish-white after-glow of the bulbs being visible for more than half a minute in a completely dark room. The light being observed with a spectroscope, it was found that, while the discharge was actually passing, the tube gave a line spectrum, the brightest lines coinciding with those of nitrogen and carbonic oxide. The feeble spectrum of the after-glow, however, is continuous, and at first occupies the entire space covered by the previously mentioned line spectrum, but it shrinks fairly

quickly on either side into a band lying between wave-lengths of 555 and 495 μ , and this band vanishes more slowly, diminishing in breadth as it does so. The colour of this band does not appear to the eye to be the characteristic colour of this part of the spectrum, but a pale yellowish-grey, which becomes darker as extinction approaches. The position of the final glow corresponds almost exactly with the line E of the solar spectrum, and coincides closely with the region of greatest brightness in the ordinary solar spectrum. The whole phenomenon is thus seen to be the exact reverse of what is observed to take place when solid bodies begin to glow. Opinion is still divided as to the cause of the after-glow in Geissler tubes, but the author considers that the results of various researches seem to show that the phenomenon must be considered to be the result of chemical modification of the contents of the tube.

THE following excerpts from the Report for 1892 of the U.S. National Museum have lately been distributed by the Smithsonian Institution. "Japanese Wood-cutting and Wood-cut Printing," by Mr. T. Tokuno, edited and annotated by Mr. S. R. Koehler. Mr. Tokuno is the chief of the Bureau of Engraving and Printing Department at Tokio, and the information which he has given to the National Museum will be welcomed by all who are interested in the art of the wood-cutter and in the arts of Japan, more especially as his communication is believed to be the first authoritative statement on this subject made by a native of Japan thoroughly qualified for the task. "The Crump Burial Cave," discovered on the southern branch of the Warrior River, Alabama, is the subject of a paper by Mr. Frank Burns. The cave is about four hundred feet above the river, and in it were found a number of wooden coffins, indicating that the aborigines used it as a burial cave. In a note to the paper, Mr. T. Wilson, the curator of pre-historic anthropology in the Smithsonian Institution, points out that while this method of coffin burial was unusual, if not previously unknown in the United States, yet there are several instances of similar burials among the prehistoric peoples of other countries. Mr. Wilson has a paper on an extensive series of minute stone implements collected by Mr. A. C. Carlyle in the Vindhya hills or mountains in central and north-western India, and now in the National Museum. The implements are said to belong to the neolithic period, but Mr. Carlyle has also found others belonging to the palæolithic period in the same locality, and he believes that the evidence of the archæology of the district shows that there was no hiatus between the palæolithic and neolithic periods, and that the series of implements run from one period to another, their differences being accounted for by the general progress from the lower to the higher civilisation. "The Comparative Oology of North American Birds" is the subject of another excerpt. In this Dr. R. W. Schufeldt brings together a large amount of information of interest to ornithologists, and presents it in a manner which will greatly facilitate the study of the variations in the matter of form and colouration of the eggs of birds of different countries.

MESSRS. CASSELL AND CO. have commenced a new issue, in monthly parts, of Mr. W. F. Kirby's admirable and comprehensive work on "European Butterflies and Moths."

MR. C. F. JURITZ's report on work done in the Analytical Laboratory and Mineralogical Museum at the Cape of Good Hope, during 1893, has just been issued.

IT was a happy inspiration that led to the publication of the series of little books on "The Country Month by Month," by Mrs. J. A. Owen and Prof. G. S. Boulger. The June number of the series points out the beauties of nature in the same attractive style that distinguished previous volumes. Messrs. Bliss, Sands, and Foster are the publishers.

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MR. A. F. CALVERT, the author of several works on Australia and its resources, has collected a number of facts and fancies with regard to "The Coolgardie Goldfield" in Western Australia, and his compilation has been published by Messrs. Simpkin, Marshall, and Co. The evidence adduced goes to show that the Coolgardie district is richly auriferous, and that the only great drawback to its development is the scarcity of water.

FOLLOWING the lead of other London Polytechnic Institutes, that at Battersea has started a journal—the *Battersea Polytechnic Review*. We hope that the new journal will not become merely a medium for recording cricket matches and social gatherings. Schemes of courses of study in various branches of science, art, and technology might be profitably included in its pages; and also lists of good books to read, and notes on recent work; while brief descriptions of the Polytechnics on the continent would create a spirit of emulation that would certainly help to develop the work of the Institute in the proper direction.

EACH of the papers in *Science Progress* is an important addition to scientific literature. The contributors to this monthly review of current investigations are always men in thorough touch with their subjects, and the result is that they summarise all that is worth knowing on the matters treated by them. The contents of the June number are as follows:—"Pure Yeast and its Relations to Brewing Operations," by Dr. A. K. Miller; "Electrosynthesis," by Dr. James Walker; "Glycogen," by Prof. W. D. Halliburton, F.R.S.; "Mesozoic and Kainozoic Geology in Europe," by Mr. Philip Lake; "The Localisation of Enzymes in Plants," by Prof. J. R. Green; and "Recent Additions to our Knowledge of the Ancient Sediments," by Mr. J. E. Marr, F.R.S.

THE additions to the Zoological Society's Gardens during the past week include a Two-Spotted Paradoxure (*Nandinia binotata*) from West Africa, presented by Mr. Joseph Wills; a Raccoon (*Procyon lotor*) from North America, presented by Mr. H. Burgess; a Grey Parrot (*Psittacus erithacus*) from West Africa, presented by Mrs. Lemming; two Goliath Beetles (*Goliathus druryi*) from West Africa, presented by Captain A. S. Mitchell; a White-handed Gibbon (*Hylobates lar*) from the Malay Peninsula; two Gazelles (*Gazella dorcas*, ♂ & ♀) from Suakin, deposited; a Beech Marten (*Mustela foina*), a Pine Marten (*Mustela martes*), European, a Silky Bower Bird (*Ptilonorhynchus violaceus*), a Garrulous Honey-eater (*Myzanthus garrulus*) from Australia, four Vinaceous Turtle Doves (*Turtur vinaceus*), four Cape Doves (*Cena capensis*) from Africa, a Timneh Parrot (*Psittacus timneh*) from Sierra Leone, two Stanley Cranes (*Tetraptyx paradisea*) from South Africa, purchased; two Hamadryads (*Ophiophagus elaps*) from India, received in exchange.

OUR ASTRONOMICAL COLUMN.

ASTRONOMICAL CONGRESSES AT UTRECHT AND VIENNA.—An astronomical congress will be held at Utrecht on Friday, the 10th, Saturday, the 11th, and Monday, the 13th of August. Notices of motion and other communications should be addressed to one of the committee before August 7. Dr. H. Gylén, of Stockholm, will preside. Herren H. Seeliger, of Munich, and R. Lehmann-Filhés, of Berlin, are acting as secretaries.

The preparations for Section 2 (Astronomy) of the meeting of German men of science and physicians, to be held this year at Vienna, from Sept. 24 to 30, are under the direction of Prof. E. Weiss, Dr. J. Palisa, and Dr. J. Holetschek. Papers and subjects for demonstration should be announced to them at once, so as to form part of the provisional programme to be issued early in July. Intending exhibitors at the scientific